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Serial No. 10/796,071

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## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

Richard L. Sutherland, et al.

Art Unit: 1756

Serial No. 10/796,071

Examiner: ANGEBRANNDT, M.

Filed: March 10, 2004

For: A SYSTEM AND METHOD FOR REPLICATING VOLUME HOLOGRAMS

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**Pre-Appeal Brief Request for Review**

Sir: The following is intended to be in compliance with the pilot program guidelines set forth in the July 12, 2005 OG Notice and is submitted with a Notice of Appeal. The undersigned respectfully requests careful consideration of the errors identified herein.

The outstanding rejections to pending claims 49-90 in the current Office Action include the following:

- (a) Claims 49-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281 and Sutherland et al. WO 98/04650, further in view of Margerum et al. '568 and Caulfield, et al. "The Applications of Holography";
- (b) Claims 49-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang '045, in view of Ikeda et al. EP 0087281, Sutherland, et al. WO 98/04650, Caulfield, et al. further in view of Margerum et al. '568 and either Eguchi et al. JP 03-188479 or Wreede et al. '118;
- (c) Claims 49-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield, et al. and Sutherland et al. WO 98/04650, in view of Margerum et al. '568, Sturdevant '946 and Redfield '861.

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The undersigned representative respectfully submits that the Office has perpetuated a clear error in maintaining the obviousness rejections above since one of the required claim limitations is not taught or suggested by any of the cited references. See MPEP § 2142. Accordingly, no combination of the references can establish a *prima facie* case of obviousness.

Independent claims 49, 70 and 80 include limitations to the replicating of a master electrically switchable hologram into a replica electrically switchable hologram by exposing the master electrically switchable hologram to a single beam that becomes two beams, transmitted and diffracted, by virtue of the holographic diffraction grating within the master electrically switchable hologram. There is no cited reference that teaches using an electrically switchable hologram as a master to form any type of hologram, static or otherwise, through contact copying. The undersigned provides a chart below summarizing that the references cited do not teach or suggest the required limitation of all independent claims that the master have electrically variable diffraction efficiency<sup>1</sup>:

	Independent CLAIM elements	Chang '045	Ikeda (EP0087281)	Sutherland (WO98/04650)	Margerum '568	Caulfield
Type of hologram recorded	Electrically Variable diffraction efficiency	STATIC – diffraction efficiency varies as move from center to edge; but not electrically controllable	STATIC	Electrically Variable diffraction efficiency	Electrically Variable diffraction efficiency	STATIC
Type of master hologram	Electrically Variable diffraction efficiency	None	STATIC	None	None	STATIC
Formed via contact copying	YES	NO	YES	NO	NO	YES

Consequently, the undersigned submits that the Office has failed to meet the threshold requirements for establishing a *prima facie* case of unpatentability.

<sup>1</sup> Additional references cited including Eguchi, Wreede, Sturdevant and Redfield are not cited in the chart as their respective teachings are less relevant to the limitations at issue than the references provided in the chart.

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Even assuming, *arguendo*, that each required limitation is taught or suggested by at least one of the cited references, there is not motivation to combine the cited references. See *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). This motivation can come from three sources: (a) the prior art references themselves; (b) the knowledge of those of ordinary skill in the art; and (c) the nature of the problem to be solved. *Ruiz v. A.B. Chance Co.*, 234 F.3d 654, 665 (Fed. Cir. 2000). The Office does not cite to the references for motivation and no “problem” has been identified. Instead, the Office has set forth numerous piecemeal conclusory opinions, with no support in the prior art, examples of which include:

- “It would have been obvious to...use the PDLC holograms of Sutherland et al. WO98/04650 as the master transmission hologram and vary the diffraction efficiency of the holographic master based on the location of the edge faded holograms to obviate the need for diffusers or varying the angle of the beam as a function of the location of the laser beam used in the scanning copy process of Ikeda et al. ...” 3/07/06 Final OA pg. 5.
- “The electrical control of the diffraction efficiency in a PDLC is clearly easier than moving a diffuser as taught by Chang '045 or varying the incident angle of the replay beam taught by Ikeda et al. EP 0087281 to generate the areas of reduced diffraction efficiency.” 3/07/06 Final OA pg. 6.
- “In the case of Chang '045, interference pattern formation is prevented at the edges by rendering the percentage of exposure less coherent in these areas which is the same effect achieved by reducing the diffraction efficiency of the grating when exposure of the edge regions occurs as more of the light merely passes through the hologram when the diffraction efficiency is reduced and by further replacing the holographic recording material of Ikeda et al. 00872181 or Chang '045 with a PDLC holographic recording material to produce a switchable hologram with faded edges so that it could be turned off when it was not desired to be in the drivers view and processing without the need for wet development.” 3/07/06 Final OA pg. 7.
- “The formation of edge-faded holograms requires both interferometric exposure and non-interferometric exposure. In the prior art, this may be achieved while using a laser for both exposures by the use of a diffuser placed in the beam path (Chang '045), adjusting the angle of the replay/reconstruction beam (Ikeda et al. EP 0087281) or not turning the PDLC hologram on (Sutherland et al. WO98/04650), leaving the beam undiffracted which is equivalent to the fixation exposure of Redfield '861. Of these, clearly the easiest is modulating the PDLC material, which

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provides incentive to use a PDLC material as the diffractive master and more easily enable the edge diffracted PDLC hologram to be formed.”  
See Office Action Page 8.<sup>2</sup>

- “The position of the examiner is that using a holograms [sp?], such as the electrically switchable holograms of Sutherland et al. WO 98/04650 as the master would allow control of the diffraction efficiency of the replica/copy by direct control of the diffraction efficiency of the master being copied as the beam is scanned across the surface, rather than controlling the incident angle of the replay/copy beam as taught by Ikeda et al. EP0087281.” See 3/07/06 Final OA Page 10.

With respect to this last opinion, there is no teaching, other than in the current specification, describing using the electrically switchable holograms of Sutherland et al. WO 98/04650 as the master and, as shown in the chart above, Ikeda results in the formation of a static hologram from a static master. Thus, even if we accept this position, it does not describe the claimed invention. Further, these are merely conclusory opinions which do not meet the Office's burden to provide motivation or suggestion to combine the cited references. The Federal Circuit recently held in In re Beasley<sup>3</sup>,

The statements made by the Examiner, upon which the Board relied, amount to no more than conclusory statements of generalized advantages and convenient assumptions about skilled artisans. At least under the MPEP then in effect, such statements and assumptions are inadequate to support a finding of motivation, which is a factual question that cannot be resolved on “subjective belief and unknown authority.” Lee, 277 F.3d at 1314. Under such circumstances, with respect to core factual findings, “the Board must point to some concrete evidence in the record in support” of them, rather than relying on its assessment of what is “well recognized” or what a skilled artisan would be “well aware.” In re Zurko, 258 F.3d 1379, 1385-86 (Fed. Cir. 2001).

Accordingly, even assuming, *arguendo*, that each of the limitations of the claims are taught or suggested by at least one cited reference (**which the undersigned does not concede**), the necessary motivation to combine the references has not been provided. The undersigned respectfully maintains that claims 49-90 are allowable over the

<sup>2</sup> The undersigned must make it clear, for the record, that neither Ikeda nor Sutherland describe the formation of edge-faded holograms using the methods of adjusting the angle of the replay/reconstruction beam or not turning the PDLC hologram as is implied by the Office (See bold portions above). The only part of the bolded statement that is actually taught by a cited reference is the statement regarding Char. 1045.

<sup>3</sup> In re Beasley, No. 04-1225, 117 Fed. Appx. 739, 743-44 (Fed. Cir. Dec. 7, 2004).

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combination of references since the Office has failed to establish a *prima facie* case of unpatentability.

With respect to rejection (c) Claims 49-90 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caulfield, et al. and Sutherland et al. WO 98/04650, in view of Margerum et al. '568, Sturdevant '946 and Redfield '861, the undersigned notes that this rejection does not even include references which the Office has relied on in an attempt to establish a *prima facie* case of obviousness for the same claims, i.e., 49-90, in rejections (a) and (b). Further, the additional references, Sturdevant '946 and Redfield '861, do not cure the basic deficiencies of the references found in (a) and (b). The undersigned maintains that this combination of references also fails to teach or suggest AT LEAST using an electrically switchable hologram as a master to form any type of hologram, static or otherwise, through contact copying.

In view of the remarks stated above, the undersigned representative respectfully requests that the rejections of claims 49-90 be withdrawn and a notice of allowance is earnestly solicited.

Respectfully submitted,

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